



Overview of LNG funding projects and opportunities in Germany

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SHAPING AND PROMOTING SUSTAINABLE MOBILITY

Integrated implementation of national programs by NOW GmbH



Municipal Electromobility

Research & Development, Procurement, Concepts

National Competence Network for Mobility (NaKoMo)

Network, Municipalities & Federal states

National Innovation Programme Hydrogen and Fuel Cell Technology (NIP)

Research & Development, Procurement, HyLand

Environmental Technologies Export Initiative

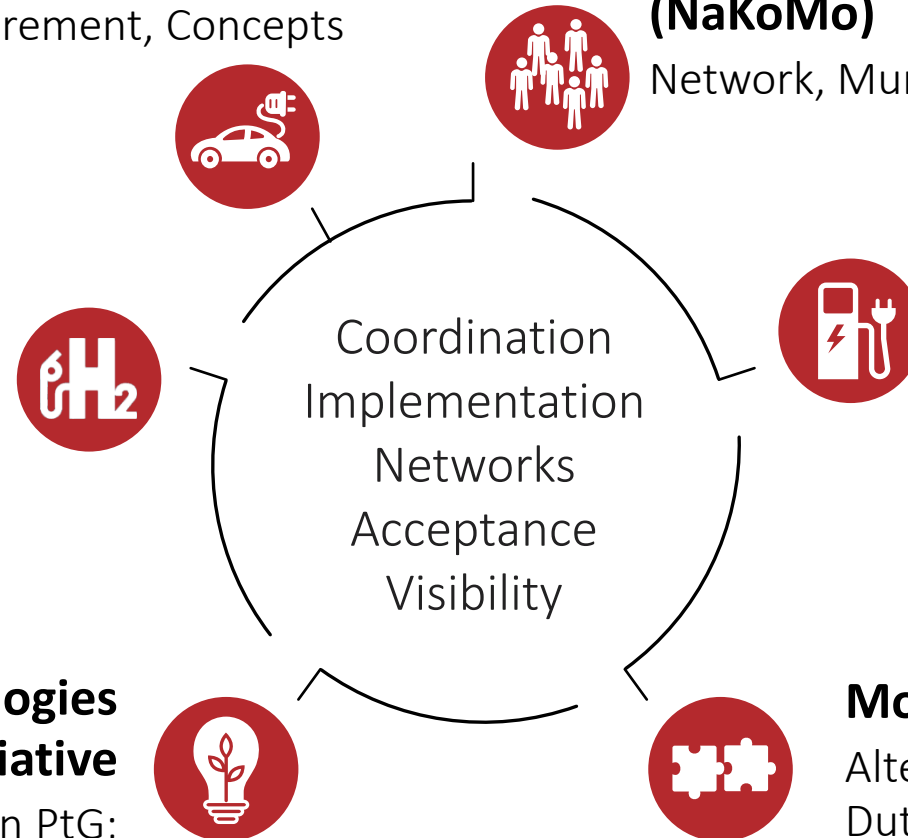
German-Japanese Cooperation PtG; H2/BZ Development cooperation

National Centre for Charging Infrastructure

Nationwide build-up of Fast and Normal charging

Mobility and Fuels Strategy

Alternative Drives and Fuels in Heavy-Duty and Shipping, Renewable Fuels



ONGOING CO-FUNDING FOR LNG FUELED VESSELS

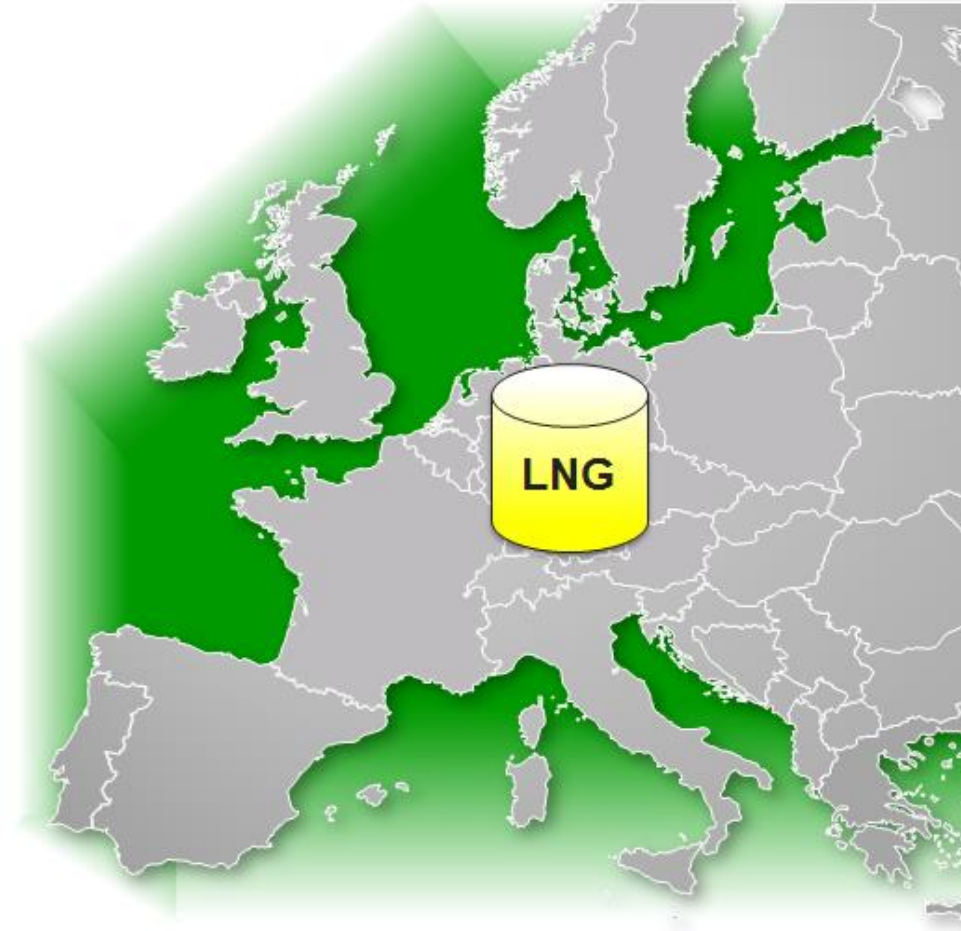
German Funding Programme for LNG as a Ship Fuel until end of 2021



Funding guideline for grants to equip and retrofit seagoing vessels to use LNG as a ship fuel by 02nd Dec. 2020

3rd call for proposal with details on content and process specific requirements on the project proposals

- For **40-60% of extra investment costs for LNG utilization** grants can be approved, depending on undertaking size (as „environmental protection grants“ referring to article 36 GBER)
- Already twelve LNG new build and retrofit projects are currently in the pipeline co-financed by grants of the 1st and 2nd call
- Many more LNG projects will be transacted by grants of the 3rd call for proposals (to be published soon)



PROJECT OVERVIEW OF THE 1ST AND 2ND CALL

12 Projects with an overall funding volume of more than 36 Mio. € in Pipeline

Gefördert durch:

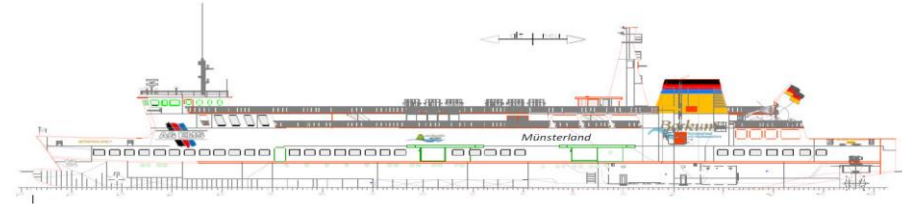


aufgrund eines Beschlusses
des Deutschen Bundestages



1 x LNG retrofit of MV „Münsterland“

Planned delivery for summer season 2021



Quelle: AG Ems

2 x TT-Line's Green Ropax LNG Newbuilds

Planned delivery of 1st RoPax ferry until 2022



Quelle: TT Line

3 x Nordic's Container Feeder LNG Newbuilds

In progress (approved for grants until end of 2020)



Quelle: Nordic Hamburg

4 x John T. Essberger's Chemical Tanker LNG Newbuilds

In progress (approved for grants until end of 2020)



LNG powered 6.600 dwt chemical tanker newbuilding

Quelle: John T. Essberger

2 x Brise/Baltrader's Cement Carrier LNG retrofits

In progress (approved for grants until end of 2020)



4.650 tdw Cement Carrier

Quelle: Brise / Baltrader

LNG RETROFIT OF MV MÜNSTERLAND

Shipyard: Koninklijke Niestern Sander BV in Delfzijl (Netherlands)

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



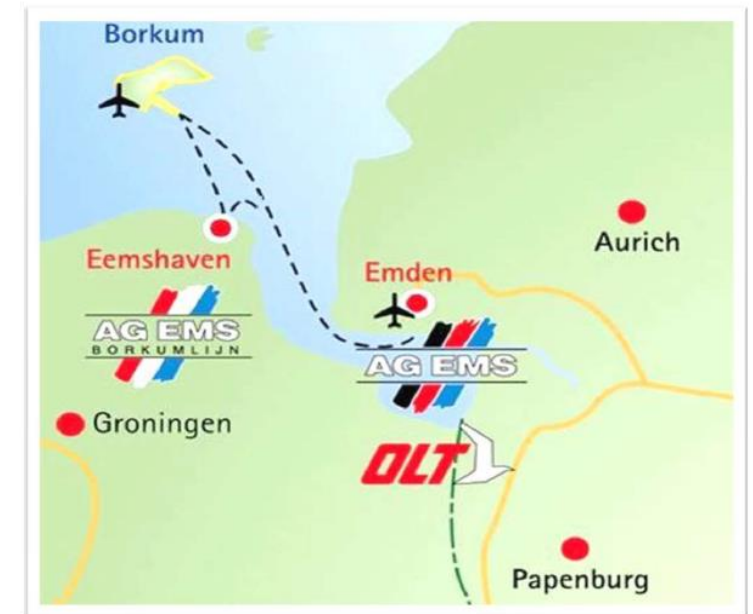
The new aft ship includes the dual fuel engines, LNG storage tank, propulsion, all LNG installations, pipes and other systems.



MV „Ostfriesland“
(1.200 Passagiere)



MV „Münsterland“
(1.200 Passagiere)



Quelle: AG Ems

Get newest information and impressions from the conversion project under: <https://www.niesternsander.com/news/>

TT-LINE'S 1ST GREEN ROPAX-NEWBUILD

Shipyard: Jiangsu Jinling Shipyard (China)

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



- To be operated in TT-Line's Baltic route network: Travemünde, Rostock (GER), Świnoujście (PL), Klaipėda (LIT) and Trelleborg (SWE)



Quelle: TT-Line

- The Green RoPax ferry has a length of about 230 m and a breadth of about 31 m
- Accommodation for up to 800 passengers and loading capacities for up to 200 trucks and trailers
- 2 x 500 m³ MAN LNG Tanks, 2 x 2 main engines: MAN 6 + 8L51/60DF, 4 x gensets: Wärtsilä 9L20DF

Get newest information and impressions from the new build project under: <https://www.ttline.com/de/passage/an-bord/tt-line-schiffe/tt-line-green-ship/>

OVERVIEW OF CO-FINANCED VESSELS IN PROGRESS

Approved for grants until end of 2020

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



3 x Nordic Hamburg's Container Feeder LNG Newbuilds



Quelle: Nordic Hamburg

- LWD (169,95 m / 26,9 m / 9,6 m)
- Strengthening Containershipp - CMA CGM's LNG-operated 1.400 TEU container feeder ship network in North European ECAs
- Dual-Fuel: main engine (10 MW), genset and boiler
- LNG tanks: 3 x 220 m³

4 x John T. Essberger's Chemical Tanker LNG Newbuilds



LNG powered 6.600 dwt chemical tanker newbuilding

Quelle: John T. Essberger

- LWD (119,9 m / 18 m / 6,5 m)
- Strengthening John T. Essberger's European chemical tanker fleet with four 6.600 dwt LNG fuelled newbuilds
- Dual-Fuel: main engine (3.1 MW), genset (800 KW) and boiler (2.7 MW)
- LNG tanks: 2 x 175 m³

2 x Brise/Baltrader's Cement Carrier LNG retrofits



Quelle: Brise / Baltrader

- LWD (98 m / 15,6 m / 6,2 m)
- Strengthening Brise/Baltrader's European cement carrier fleet with two 4.650 dwt LNG fuelled newbuilds
- Dual-Fuel: main engine (2 MW)
- LNG tank: 250 m³

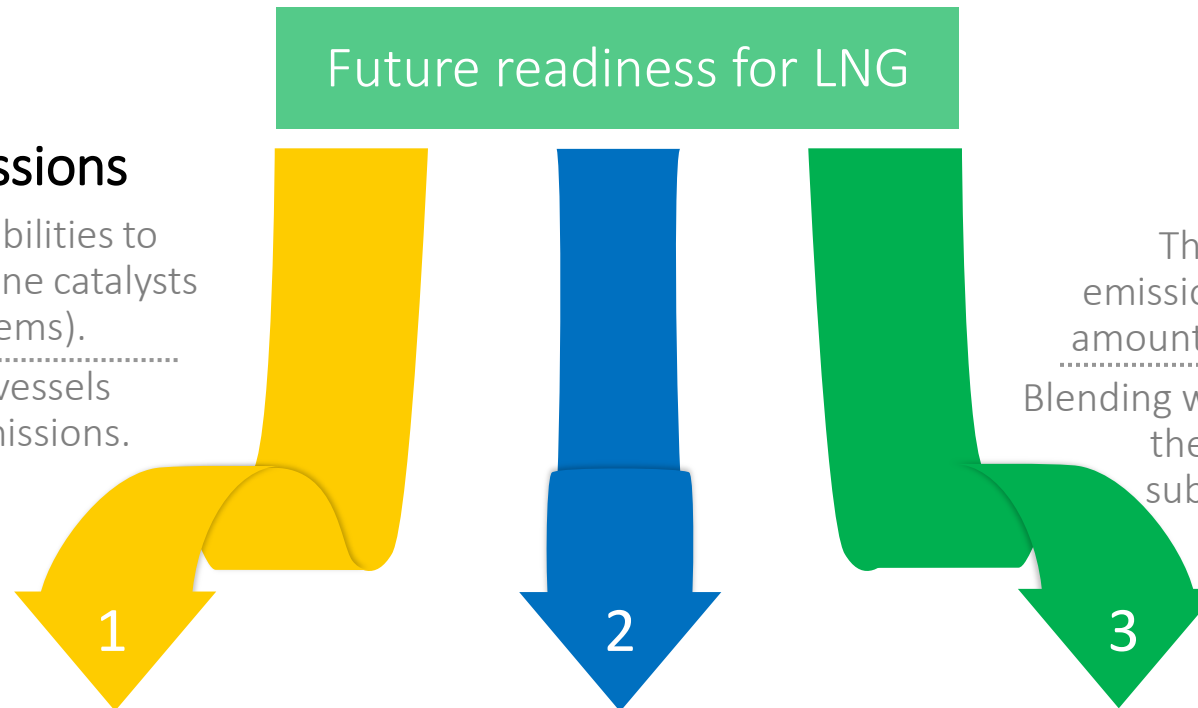
TECHNOLOGICAL IMPLICATIONS FOR LNG AS SHIP FUEL

Technical and Operational Levers On the Pathway to Climate-Friendly Shipping

Eliminate methane emissions

Utilization of technological possibilities to reduce methane slip (like methane catalysts or exhaust gas recirculation systems).

Future readiness of LNG fueled vessels depending on their methane emissions.



Strengthen On-board Efficiency

Operational concepts to drive-down energy consumption + Investments in hybrid technologies (egg. with on-shore Power Supply/batteries/fuel cells) will play a more prominent role in the future

Use synthetic methane

The biggest lever to drive down GHG emissions is to blend LNG with upcoming amounts of renewable synthetic methane
Blending with Bio-LNG is already possible for the market, Pt-LNG will be the major substitute on a long term perspective

„BORDSTROMTECH“ FUNDING PROGRAMME

Grants for Environmental friendly Auxiliary and Mobile On-shore Power Supply



Environmental friendly Auxiliary Power Systems (for seagoing and inland waterway vessels)

Fuel Cells



Quelle: Meyer Werft / e4ships

Gas-Gensets



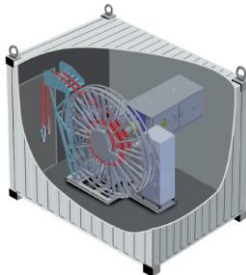
Quelle: Capstone

Battery Systems



Quelle: Westcon Power & Automation

Plug-In Systems for On-shore Power



Quelle: Lethe GmbH

Mobile On-Shore Power Supply Systems (containerized, rolling und swimming)

Containerized systems



Quelle: Proton Motor



LNG PowerPac



Quelle: NPorts



Quelle: LoCOPS

Rolling systems



Quelle: Cavotec

Swimming systems

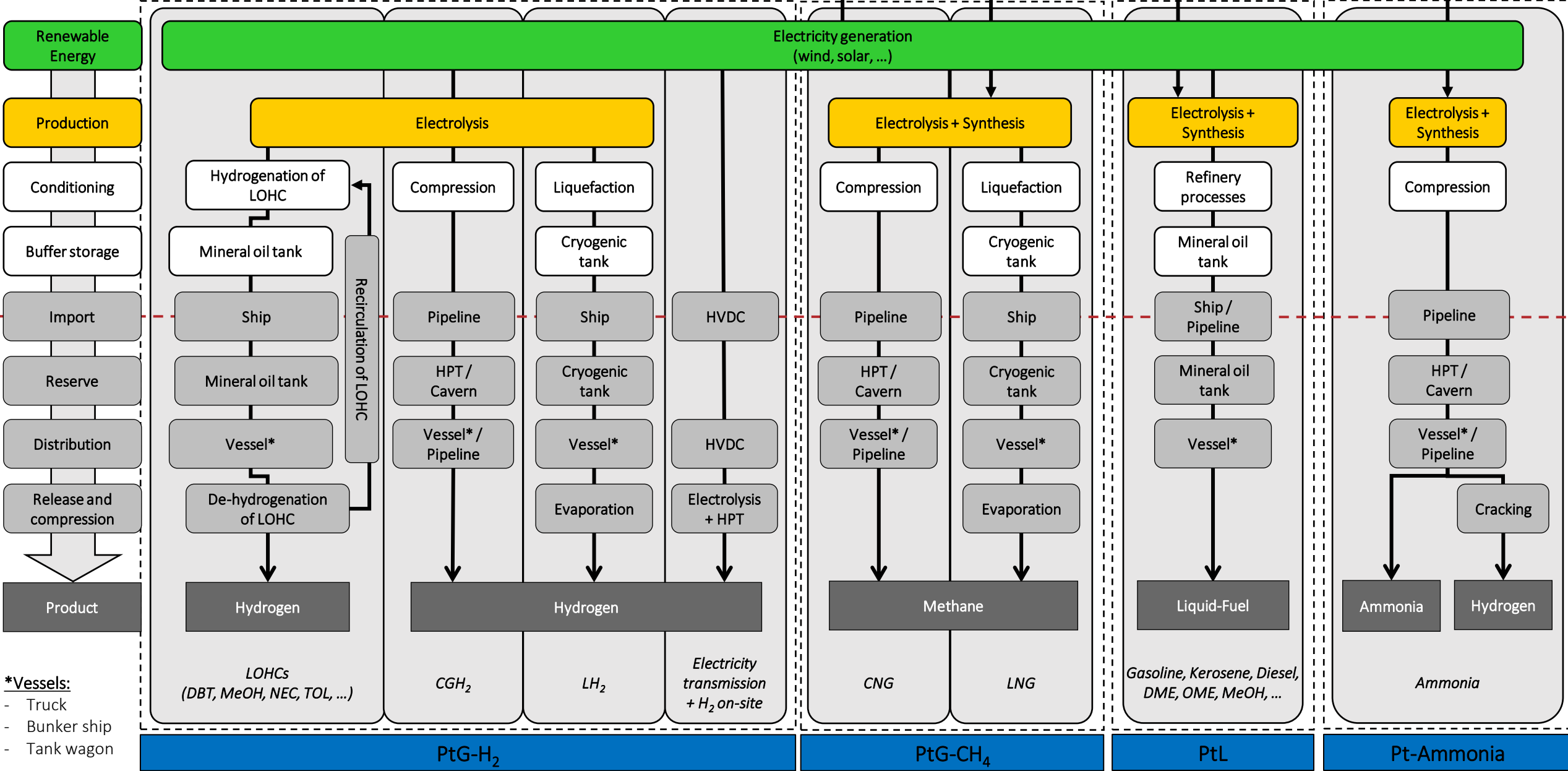


Quelle: Becker
Marine Systems



Quelle: Brødrene Aa and
Westcon Power & Automation

INTERNATIONAL E-FUEL SUPPLY CHAINS





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